

MCF 3M Opener

12. A helicopter drops an aid package. The height of the package above the ground at any time is modelled by the function $h(t) = -5t^2 - 30t + 675$, where $h(t)$ is the height in metres and t is the time in seconds. How long will it take the package to hit the ground?

Oct 5-7:36 AM

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Zeros

$$0 = -5t^2 - 30t + 675$$

$$0 = -5(t^2 + 6t - 135)$$

$$0 = -5(t^2 + 15t - 9t - 135)$$

$$0 = -5(t(t+15) - 9(t+15))$$

$$0 = -5(t+15)(t-9)$$

$t = -15$ *-ve time*
 $t = 9$

The aid hits the ground at 9 sec.

Oct 5-7:36 AM

Section 3.5

q#6 p.68-Solving Using the Desmos

6. The population of a city is modelled by the function $P(t) = 0.5t^2 + 10t + 200$, where $P(t)$ is the population in thousands and t is time in years. Note: $t = 0$ corresponds to the year 2000. According to the model, when will the population reach 312 000?

Population

$$P(t) = 0.5t^2 + 10t + 200$$

 $P(t)$ = pop in thousands t = time years ($t = 0$ year 2000)

When will it reach 312 000 (312)

Mar 10-9:16 AM

Calculating the Roots

$$P(t) = 0.5t^2 + 10t + 200$$

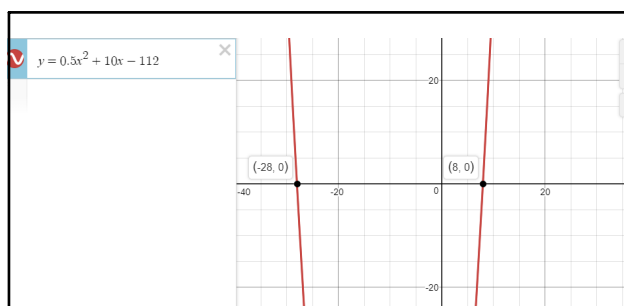
$$\text{Sub } P(t) = 312$$

$$312 = 0.5t^2 + 10t + 200$$

$$0 = 0.5t^2 + 10t + 200 - 312$$

$$0 = 0.5t^2 + 10t - 112$$

Mar 10-9:19 AM



In 2008 and in 1972 the population reaches 312 000 people

Mar 7-9:06 AM

Algebraically

$$0 = 0.5t^2 + 10t - 112$$

$$0 = 0.5(t^2 + 20t - 224)$$

$$0 = 0.5(t^2 + 20t - 8t - 224)$$

$$0 = 0.5(t(t+20) - 8(t+20))$$

$$0 = 0.5(t+20)(t-8)$$

-20 8
 (-1972) (2008)

At 2008 and in 1972 the population will reach 312000.

Oct 1-9:19 AM

p 168&169

1 factor

q. 2-5 7-11

Test Thursday Mar 22 Ch. 2 & 3

Mar 10-9:28 AM

3) $d(s) = \text{stopping distance } s = \text{km/h}$
 $d(s) = 0.0056s^2 + 0.14s$
 $7 = 0.0056s^2 + 0.14s$
 $0 = 0.0056s^2 + 0.14s - 7$

TI 83

calculate zeros

(25, 0)
 At 25 km/h it will take 7m to stop.

Mar 10-9:42 AM

Solve q8 p169

- i) State Function
- ii) State Ind / Dep variables
- iii) State window requirements to display function
- iv) How far back does the firefighter need to stand in order to safely hit the fire?

Mar 8-7:41 AM

eqn $(4, 5)$ $y_{int} - 3$
 h, t

$$y = a(x-4)^2 + 5$$

$$-3 = a(0-4)^2 + 5$$

$$-3 = a(4)^2 + 5$$

$$-3 = a(16) + 5$$

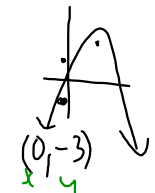
$$-3 - 5 = a(16)$$

$$-8 = a(16)$$

$$\frac{-8}{16} = \frac{a(16)}{16}$$

$$a = -\frac{1}{2}$$

$$y = -\frac{1}{2}(x-4)^2 + 5$$



Mar 8-10:33 AM

Oct 8-8:19 AM